PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04N 5/44, 5/50, 5/445 — A1

(11) International Publication Number: **WO 98/12872**

(43) International Publication Date: 26 March 1998 (26.03.98)

(21) International Application Number: PCT/US97/16437

(22) International Filing Date: 16 September 1997 (16.09.97)

(30) Priority Data:
08/715,192 17 September 1996 (17.09.96) US

(71) Applicant: STARSIGHT TELECAST, INCORPORATED [US/US]; 3rd floor, 39650 Liberty Street, Fremont, CA 94538 (US).

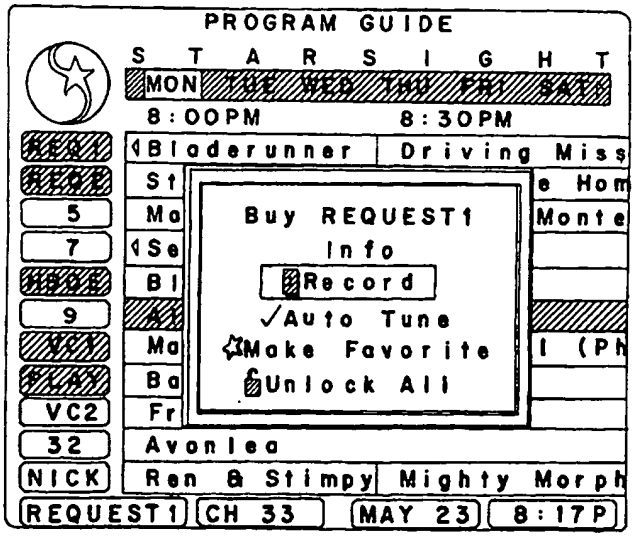
(72) Inventors: CASEMENT, Marcia, A.; 1217 Spencer Avenue, San Jose, CA 95125 (US). FOLKER, David; Apartment 362, 39505 Gaullaudet Drive, Fremont, CA 94538 (US).

(74) Agents: KRUEGER, Charles, E. et al.; Townsend and Townsend and Crew LLP, 8th floor, Two Embarcadero Center, San Francisco, CA 94111 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: TELEVISION SCHEDULE SYSTEM WITH POP-UP ACTION MENU AND ICONS



(57) Abstract

The present invention includes an interactive computer system (10) which provides television schedule information and displays an action pop-up listing actions which can be scheduled. In the preferred embodiment, a memory (14) stores a computer program, image data, and received data. This data includes the television schedule information. A processor (16) uses the computer program to organize the television schedule information into a desired format, display an action pop-up for a chosen program, and schedule an action listed in the pop-up when selected by the user. Icons are listed in various displays indicating actions scheduled for associated programs.

BEST AVAILABLE COPY

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

TELEVISION SCHEDULE SYSTEM WITH POP-UP ACTION MENU AND ICONS

BACKGROUND OF THE INVENTION

Systems are available for providing television schedule information to a user. For example, U.S. Patent No. B1 4,706,121 (Young), provides a television schedule system and process. The system disclosed in the Young patent receives television schedule information as a broadcast. In one embodiment of Young, the television schedule information is provided on the user's television screen. The user can then supply selection criteria which are utilized by the Young system to make program selection, to control the television schedule information displayed on the television screen, etc. In addition, Young discloses a system which controls a television receiver to allow for the automatic user selection of programs and the automatic, unattended recording of programs that are listed in the television schedule information. The automatic, unattended recording of programs is achieved by controlling a video tape recorder (VCR) or other recording device. Young also proposes utilizing a personal computer for the television schedule information.

Schedule information is typically displayed on a grid or matrix having program names at time and channel locations on the grid. In some systems, such as disclosed in U.S. Patent No. 5,353,121 (Young), special buttons on a remote control are utilized to schedule events or access information in special formats.

Fig. 1 shows an example of a television schedule guide as displayed on a computer screen along with a user input device. In the preferred embodiment, the television schedule information is provided in a grid-like display on a television or computer screen 50. In this example, various channels are provided on the Y-axis of the grid guide, and

various times are provided on the X-axis of the grid guide. This display can also contain special instructions for the user in screen area 52. The television schedule guide in Fig. 2 has been customized by a user such that only channels 2, 3, 4, 5, 7, HBO, SHO and PBS are included in the displayed guide. In one embodiment, a television within computer system 810 or television system 830 (Fig. 8) can be used as computer screen 50.

Additionally, when events are scheduled they are added to a schedule of those events. For example, a schedule of all shows to be recorded may be maintained and displayed to the viewer on request when the schedule button is pushed. Additionally, schedules listing all shows of a particular type, e.g., comedy, or broadcast on a particular station may be displayed.

Consumers tend to be uncomfortable with scheduling technology and thus there is a continuing need for creative techniques to make scheduling easier and more accessible to consumers.

SUMMARY OF THE INVENTION

The present invention provides a system for scheduling events that is user friendly and intuitive. According to one aspect of the invention a menu of possible scheduling activities can be popped up for a particular program displayed in a scheduling grid.

According to another aspect of the invention, a menu of possible scheduling activities can be popped-up for a current program being viewed by a viewer.

According to another aspect of the invention, an item is scheduled by selecting it from the popped-up menu.

According to another aspect of the invention, icons reminding the viewer of certain events already scheduled are displayed next to programs in the scheduling grid.

According to another aspect of the invention, icons reminding the viewer of certain events already scheduled are displayed next to events listed in an action pop-up for a particular program.

According to another aspect of the invention, the duration of scheduled events is listed next to the events in a schedule.

According to another aspect of the invention, the on-screen action pop-up is generated by a controller in a set-top box.

According to another aspect of the invention, a memory located within a personal computer stores a computer program and received data. These data include the television schedule information. A processor uses the computer program to organize the television schedule information into a desired format. The television schedule information and action pop-up are then displayed on a television screen or on a computer monitor/display in the desired format.

According to another aspect of the invention, the pop-up menu is activated by holding down a selected button on a remote control for a predetermined period.

According to another aspect of the invention, the pop-up menu can be activated by utilizing an input device to a personal computer.

Additional features and advantages will become apparent in view of the following detailed description and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows an example of a television schedule grid as displayed on a screen along with a user input device;

Fig. 2 depicts a pop-up displayed on a screen providing a list of options related to the selected channel and program;

Fig. 3 is a flowchart depicting the steps of scheduling an event with the action pop-up;

Fig. 4 is a schematic diagram of a user input device;

Fig. 5 is a diagram of a display for purchasing a pay-per-view program;

Fig. 6 is a schedule listing actions scheduled;

Fig. 7 is a block diagram of a television scheduling system; and

Fig. 8 illustrates a computer system coupled to a television system.

DESCRIPTION OF SPECIFIC EMBODIMENTS

The present invention provides an interactive computer system which assists a user in utilizing television schedule information. In a preferred embodiment, the user can (1) display television schedule information in a desired format on the computer or television screen, (2) select a chosen program which is listed in the television schedule information to display an action pop-up, and (3) select one or more chosen action items which are listed in the action pop-up to automatically schedule the selected action. To provide this functionality in the preferred embodiment, the present invention includes a computer system, implemented as a dedicated set-top box, a personal computer, or a combination of personal computer and set-top box and a television system. The displays are created and actions scheduled by application software stored in the memory of the computer system.

Fig. 2 depicts an action pop-up superimposed over a scheduling grid displayed on a television screen. Fig. 3 is a flowchart depicting the steps of initiating the display of the action pop-up and selecting an action to be performed. The utilization of the action pop-up and the function of the application programs stored in computer memory will now be described with reference to Figs. 1, 2, and Fig. 3, which depict a user input device configured as a remote control.

The user, via input device 60, can scroll throughout the television schedule information provided in the grid guide. Fig. 4 depicts a user input device 60 in the form of a specially configured IR remote control. In Fig. 4, action buttons 61 cause actions to be scheduled, a schedule button 62 causes a schedule of events to be displayed, scroll or cursor 64 buttons allow the user to choose an item in the grid, a page button 66 changes the page of the grid displayed, and a select button 68 selects a chosen program. User input device

60 can also be, for example, a keyboard with arrow keys, a computer pointing device (e.g., a mouse) or a voice recognition input. By utilizing user input device 60, a user can sort, mix, and do a special customized line-up of channels within the television schedule guide displayed on a television or computer screen. In addition, the user can automatically tune to a desired program or can select different programs for automatic recording. For more information on automatic tuning and automatic recording, see U.S. Patent No. B1 4,706,121 and U.S. Patent Application No. 08/423,411; this patent and this patent application are, like the present patent application, assigned to Starsight Telecast, Inc. U.S. Patent No. B1 4,706,121 and U.S. Patent Application No. 08/423,411 are hereby incorporated by reference in their entirety for all purposes.

The viewer chooses a program in the grid by using the cursor direction buttons 64 on the remote control. In this embodiment the select button is utilized in hypermode where a short press of the select button causes the application software to initiate a tune function and holding the select button down for a predetermined length of time causes the application software to display the action pop-up.

When the action pop-up is displayed, the viewer moves between the listed actions utilizing the up and down direction buttons 64. When the desired action is chosen, the select button is given a short press to select the desired action to be effected on the chosen program in the grid.

Thus, a viewer does not need to understand the use of the special action keys on the remote or the keys can be eliminated to simplify the design and reduce the cost of the remote control device.

In Fig. 2 the actions listed are: "Buy"; "Info"; "Auto Tune"; "Record"; "Make Favorite"; and "Unlock All".

The "Buy" item will only appear if a pay-per-view channel is chosen. If the "Buy" item in the action pop-up is selected then a purchasing screen, as depicted in Fig. 5, is displayed. The purchasing screen displays the time of the

program to be purchased and the price of the program. If the user wishes to purchase the program then SELECT is pressed.

If the "Auto Tune" or "Record" items in the action pop-up are selected, these functions are scheduled and implemented as described in the above-referenced patents.

If the "Make Favorite" action is selected, the station broadcasting the chosen program is marked as favorite channel for FAV key tuning.

The "Unlock All" action is displayed only if programming has previously been locked to prevent unauthorized viewing.

Alternatively, the viewer may activate the pop-up to display options available for a program currently being viewed without the need to first display the scheduling grid guide. In the preferred embodiment, the pop-up is activated by holding the select button down for the predetermined length of time. Thus, in Fig. 2 the pop-up would be superimposed over the program currently being watched. The action selected from the pop-up would be directed to program being viewed. For example, it could be made a favorite or recorded by selecting the appropriate options.

Additionally, in the preferred embodiment the application software displays an icon next to the program entry in the scheduling grid to associate the icon with action in the viewer's mind.

The icons for the series, record, and tune actions are displayed on the bottom of Fig. 6 which is a schedule of actions scheduled. Briefly, the series icon is displayed along with one of the other icons to indicate that the action indicated by the other icon has been scheduled to occur repeatedly according to a selected schedule. The record icon indicates that the application software will cause the program marked by the icon to be recorded; the buy icon indicates that a pay-per-view program marked by the icon has been purchased; and the tune icon indicates that the application software will automatically tune to the program marked by the icon when the program is broadcast.

automatically tune to the program marked by the icon when the program is broadcast.

In a preferred embodiment, as depicted in Fig. 6, the application software displays the duration of each scheduled event in a column included in a schedule of events display. The information relating to the programs to be recorded is the most important and is highlighted because the viewer must determine whether a cassette has enough available tape to record the program.

Fig. 7 is a block diagram of a television schedule systems/controller 180 with which the viewer input device 212 is used to display action pop-ups. The schedule system/controller 180 is applicable to existing television equipment, where the schedule system is separate from the basic television equipment. Programmable tuner 202 is shown as part of a cable decoder. It is clear from Fig. 7 that the system/controller 180 may be implemented as a set top box or be integrated into other television equipment, such as a cable decoder or a TV/Monitor receiver. It is also practical to implement the entire system/controller 180 in a remote controller by adding a text display, such as an LCD screen, on remote controller 212.

In the system 180, programmable tuner 202, which may be part of a cable decoder unit, receives a TV signal from antenna 200 and/or from cable input 205. Tuner output 216 goes to a vertical blanking interval (VBI) decoder 222, which may be a closed caption decoder or a high speed teletext decoder. Listing information and other support information, such as cable channel assignment data, will be transmitted over the VBI by one or more local stations or cable channels several times a day or continuously.

When update is required, programmable tuner 202 will be tuned automatically to the station or cable channel carrying the data. After the VBI signal is processed by CPU 228, the listing data is stored in schedule memory 232, while the cable channel assignment data is stored in cable-specific RAM memory 238. This data is used to convert generic TV

source names, such as HBO, to channel assignments for the specific cable system.

Other information transmitted to the schedule/tape controller 180 and stored in the system RAM memory 240 includes clock update data to set system clock 230 automatically, schedule update time, which may vary from once a day to a continuously transmitted format, new theme categories, and last minute schedule change data.

To display an action pop-up on the television monitor 210 in response to receiving a pop-up input device signal, pop-up image data is stored in system RAM/ROM 240 and is processed by the CPU and output to the video display generator 224. The video switcher 226 is enabled by CPU output 246 to select the video display generator output whenever a pop-up is to be presented to the TV/monitor 210.

Fig. 8 illustrates a computer system coupled to a television system. In the preferred embodiment, computer system 810 includes standard computer 812 which is, for example, any available personal computer (e.g., IBM compatible, Macintosh, and the like). Computer 812 can also be located within a set-top box (e.g., a DSS box). Computer 812 contains hard drive 814 and processor 816. These units 814 and 816 are usually, automatically included in computer 812. Disk input 818 is used to provide computer 812 with various, additional software. User input 820 allows a user to interact with computer 812 and/or the television schedule guide. Line 823 is connected to an available serial, parallel or other data port 823 on computer 812. This line 823 is used to connect other devices/components to computer 812.

Television system 830 includes television 832 which may be any commercially available television. Television system 830 may or may not include a video tape recorder (VCR). In this embodiment, VCRs 834 and 836 are coupled to television 832. These VCRs 834 and 836 can be, for example, any commercially available VCRs or any other type of recording device (analog or digital). User interface device 840 allows a user to interact with, for example, television 832, VCR 834, and/or VCR 836. As described above, user interface device 60

can be, for example, a remote control or a voice activated interface. Line 837 is used to connect other devices to VCR 834. Other devices can also be connected in series between VCR 834 and television 832 via line 838. Computer 812 (or computer system 810) and television 832 (or television system 830) can be located in different rooms within a private residence or a commercial building.

In the preferred embodiment, a computer program that is hard-coded is provided on diskettes, a CD ROM or other medium contains the software needed for receiving, organizing and displaying data for the television schedule guide. These diskettes are inserted in disk input 818 and the software for these diskettes is stored within computer 812 on hard drive 814 or on another mass storage location. This action can be performed by, for example, the user or a service person. The computer program can also be provided, for example, via downloading from a satellite 824, transmission through the internet or other on-line service, or transmission through another type of land line 822 (e.g., coax cable, telephone line, optical fiber, or the like).

The present invention will be of great utility in PCTV applications, where a PC monitor including a tuner to function both as a television screen to view programming and a computer monitor to display computer generated displays. For example, the "Buy" action item, when selected, can be executed by the PC automatically communicating service provider and purchasing the selected program.

In addition to the computer program, data for the basic schedule information and other related data (e.g., data relating to a particular show) are needed for the generation and maintenance of the television schedule guide. These data can be received via line 822; they can also be provided via a satellite broadcast from satellite 824. Additionally, the television schedule information and related data can be sent directly to television 832 via satellite 824. In this arrangement, the television schedule information and related data does not have to be transmitted from computer system 810 to television system 830.

In one embodiment, line 822 is a telephone line which provides access to the internet or other on-line service via, for example, a regular modem or direct modem access to a schedule provider. The schedule data are then provided via the internet or other on-line service, or directly from the service provider. As stated above, line 822 can also be, for example, coax cable, optical fiber or any other land line which can provide data to computer 812. The software program saved on hard drive 814 then utilizes the data received on line 822 to generate a television schedule guide. The user can retrieve this generated television schedule guide when desired.

In general, the flowcharts in this specification include one or more steps performed by software routines executing in a computer system. The routines may be implemented by any means as is known in the art. For example, any number of computer programming languages, such as Java, "C", Pascal, FORTRAN, assembly language, etc., may be used. Further, various programming approaches such as procedural, object-oriented or artificial intelligence techniques may be employed.

Many such changes or modifications will be readily apparent to one of ordinary skill in the art. For example, a pop-up could be displayed in any schedule of programs to schedule events for programs displayed. Further, in a PCTV context, actions displayed in a PCTV pop-up could include buying an item being sold on a home shopping station.

While a full and complete disclosure of the invention has been provided, it will be apparent to those skilled in the art that various modifications and changes can be made.

WHAT IS CLAIMED IS:

1. A processor-implemented method for performing and scheduling actions related to viewing and recording televisions programs, with said method implemented in a system including a television, a processing system, television/processing system interface, a viewer input device, and an input device/processing system interface, said method comprising the steps of:

displaying a program scheduling grid displaying program names at grid locations indicating the time and channel that a named program will be received;

indicating that a particular program has been chosen in response to a move cursor signal generated by a viewer input device;

displaying an action pop-up, including a plurality of actions relating the particular program chosen, in response to a first signal generated by the viewer input device;

indicating that one of said plurality of actions has been chosen in response to a mover cursor signal generated by the viewer input device; and

scheduling the action chosen in response to a selection signal generated by the viewer input device.

2. The method of claim 1 further comprising:

displaying an icon next to each action listed to associate the icon with the action.

3. The method of claim 1 further comprising:

displaying a schedule of selected events listing each scheduled event;

displaying the duration of each event in a schedule displayed; and

displaying an icon next to each event indicating the type of action scheduled.

4. The method of claims 2 or 3 wherein:

said icon is a symbol indicating that the action scheduled is to record the chosen particular program.

5. The method of claims 2 or 3 wherein:
said icon is a symbol indicating that the action scheduled is to purchase the chosen particular program.

6. The method of claims 2 or 3 wherein:
said icon is a symbol indicating that the action scheduled is to automatically tune to the chosen particular program when it is received.

7. A processor-implemented method for performing and scheduling actions related to viewing and recording televisions programs, with said method implemented in a system including a television, a processing system, television/processing system interface, a viewer input device, and an input device/processing system interface, said method comprising the steps of:
displaying a current program for viewing by a user;
displaying an action pop-up, including a plurality of actions relating the particular program chosen, in response to a first signal generated by the viewer input device;
indicating that one of said plurality of actions has been chosen in response to a mover cursor signal generated by the viewer input device; and
scheduling the action chosen for the current program in response to a selection signal generated by the viewer input device.

8. The method of claim 7 further comprising:
displaying an icon next to each action listed to associate the icon with the action.

9. The method of claim 7 further comprising:
displaying a schedule of selected events listing each scheduled event;

displaying the duration of each event in a schedule displayed; and

displaying an icon next to each event indicating the type of action scheduled.

10. The method of claims 8 or 9 wherein:

said icon is a symbol indicating that the action scheduled is to record the chosen particular program.

11. The method of claims 8 or 9 wherein:

said icon is a symbol indicating that the action scheduled is to purchase the chosen particular program.

12. The method of claims 8 or 9 wherein:

said icon is a symbol indicating that the action scheduled is to automatically tune to the chosen particular program when it is received.

13. A computer program product article of manufacture comprising:

a computer usable medium having a computer readable code embodied thereon for causing scheduling actions related to viewing and recording televisions programs to be performed, in a system including a television, a processing system, television/processing system interface, a viewer input device, and an input device/processing system interface, the computer program product article of manufacture comprising:

computer readable program code devices configured to cause a computer to effect displaying a program scheduling grid displaying program names at grid locations indicating the time and channel that a named program will be received;

computer readable program code devices configured to cause a computer to effect indicating that a particular program has been chosen in response to a move cursor signal generated by a viewer input device;

computer readable program code devices configured to cause a computer to effect displaying an action pop-up,

including a plurality of actions relating the particular program chosen, in response to a first signal generated by the viewer input device;

computer readable program code devices configured to cause a computer to effect indicating that one of said plurality of actions has been chosen in response to a mover cursor signal generated by the viewer input device; and

computer readable program code devices configured to cause a computer to effect scheduling the action chosen in response to a selection signal generated by the viewer input device.

14. The device of claim 13 further comprising:

computer readable program code devices configured to cause a computer to effect displaying an icon next to an action scheduled indicating that the action has been scheduled whenever an action pop-up is displayed for the particular program chosen.

15. A computer program product article of manufacture comprising:

a computer usable medium having a computer readable code embodied thereon for causing scheduling actions related to viewing and recording televisions programs to be performed, in a system including a television, a processing system, television/processing system interface, a viewer input device, and an input device/processing system interface, with the television displaying a current program being viewed by a view, the computer program product article of manufacture comprising:

computer readable program code devices configured to cause a computer to effect displaying an action pop-up, including a plurality of actions relating the current program being viewed, in response to a first signal generated by the viewer input device;

computer readable program code devices configured to cause a computer to effect indicating that one of said

plurality of actions has been chosen in response to a mover cursor signal generated by the viewer input device; and

computer readable program code devices configured to cause a computer to effect scheduling the action chosen for the current program being viewed in response to a selection signal generated by the viewer input device.

16. The device of claim 15 further comprising:

computer readable program code devices configured to cause a computer to effect displaying an icon next to an action scheduled indicating that the action has been scheduled whenever an action pop-up is displayed for the particular program chosen.

17. A television schedule system with television schedule information comprising:

a viewer input device including a plurality of keys for generating input device signals, with the input device signals including a move cursor signal, a pop-up input device signal, and a selection input device signal;

an input device/processor interface for receiving said input device;

a memory for storing a computer program, information related to generating a scheduling grid for displaying television programs at grid locations indicating the time and channel of a television program broadcast, said television schedule information data;

a display;

a display/processor interface;

a processor coupled to said memory, said input device/processor interface, and said display/processor interface, said processor for executing said program to schedule events by virtue of being configured to;

display a program scheduling grid displaying program names at grid locations indicating the time and channel that a named program will be received;

indicate that a particular program has been chosen in response to a move cursor signal generated by a viewer input device;

display an action pop-up, including a plurality of actions relating the particular program chosen, in response to a pop-up input device signal generated by the viewer input device;

indicate that one of said plurality of actions has been chosen in response to a move cursor input device signal generated by the viewer input device;

schedule the action chosen in response to a selection input device signal generated by a viewer input device.

18. The system of claim 17 wherein:

said user input device includes a select key that operates in a hypermode to generate either the select input device signal when the select key is briefly pressed or to generate the pop-up input device signal when the select key is held down for a predetermined time interval.

19. A television control system comprising:

a viewer input device including a plurality of keys for generating input device signals, with the input device signals including a move cursor signal, a pop-up input device signal, and a selection input device signal;

an input device/processor interface for receiving said input device;

a memory for storing a computer program;

a display for displaying a current program being viewed by a viewer;

a display/processor interface;

a processor coupled to said memory, said input device/processor interface, and said display/processor interface, said processor for executing said program to schedule events by virtue of being configured to;

display an action pop-up, including a plurality of actions relating the particular program chosen, in

response to a pop-up input device signal generated by the viewer input device;

indicate that one of said plurality of actions has been chosen for the current program in response to a move cursor input device signal generated by the viewer input device;

schedule the action chosen for the current program in response to a selection input device signal generated by a viewer input device.

20. The system of claim 19 wherein:

said user input device includes a select key that operates in a hypermode to generate either the select input device signal when the select key is briefly pressed or to generate the pop-up input device signal when the select key is held down for a predetermined time interval.

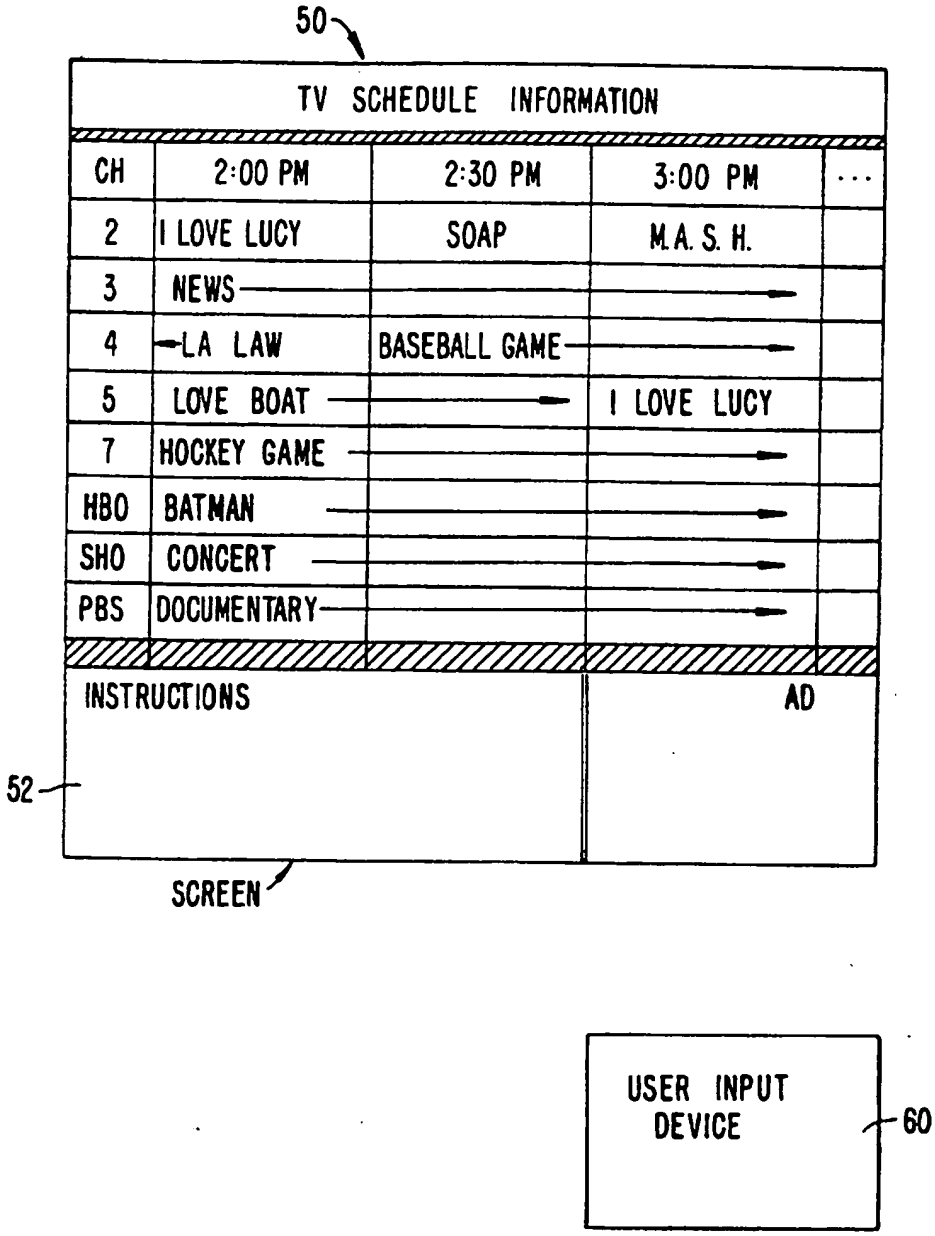

50
TV SCHEDULE INFORMATION
CH
2:00 PM
2:30 PM
3:00 PM
...
2
I LOVE LUCY
SOAP
M.A.S.H.
3
NEWS
4
LA LAW
BASEBALL GAME
5
LOVE BOAT
I LOVE LUCY
7
HOCKEY GAME
HBO
BATMAN
SHO
CONCERT
PBS
DOCUMENTARY
INSTRUCTIONS
AD
52
SCREEN
USER INPUT DEVICE
60

FIG. 1.

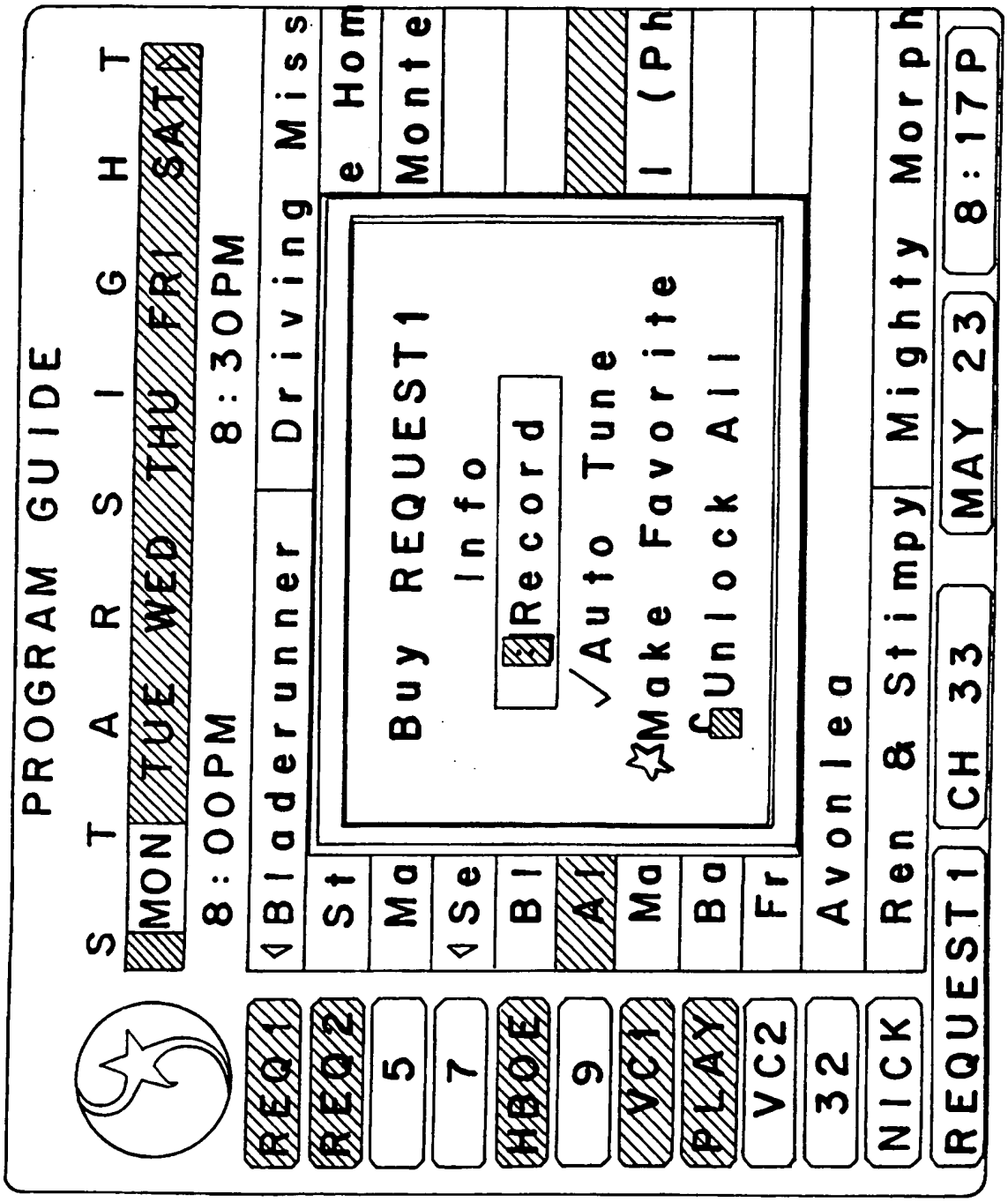

PROGRAM GUIDE
STARSIGHT
MON TUE WED THU FRI SAT
8:00PM
8:30PM
Bladerunner
Driving Miss
St
Ma
Se
Bl
Al
Ma
Ba
Fr
Avonlea
Ren & Stimpy
Mighty Morph
8:17P
MAY 23
CH 33
REQUEST1
REQ1
REQ2
5
7
HBOE
9
VC1
PLAY
VC2
32
NICK
Buy REQUEST1
Info
Record
Auto Tune
Make Favorite
Unlock All

FIG. 2.

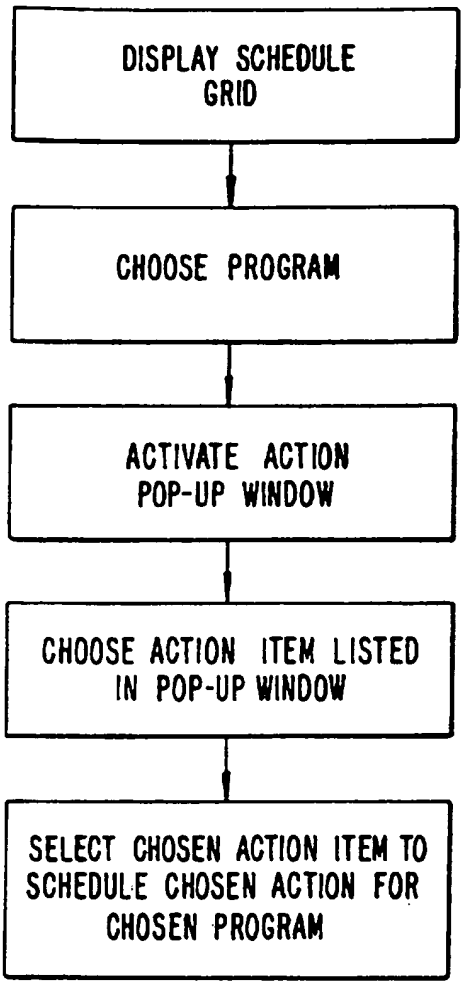

DISPLAY SCHEDULE GRID
CHOOSE PROGRAM
ACTIVATE ACTION POP-UP WINDOW
CHOOSE ACTION ITEM LISTED IN POP-UP WINDOW
SELECT CHOSEN ACTION ITEM TO SCHEDULE CHOSEN ACTION FOR CHOSEN PROGRAM

FIG. 3.

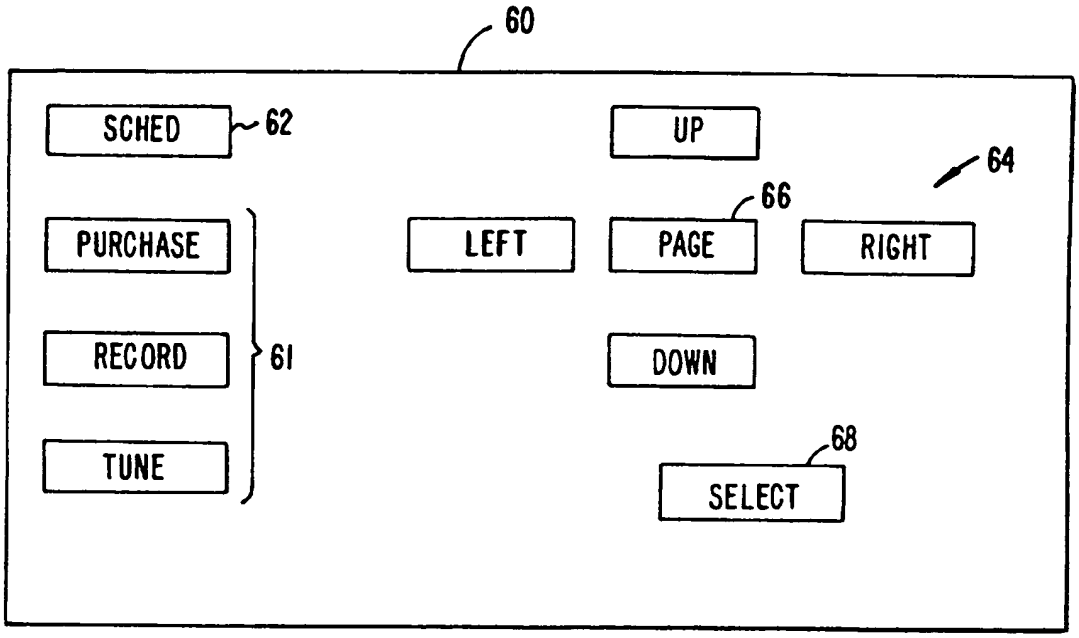

60
SCHED
62
UP
64
66
PURCHASE
LEFT
PAGE
RIGHT
RECORD
61
DOWN
68
TUNE
SELECT

FIG. 4.

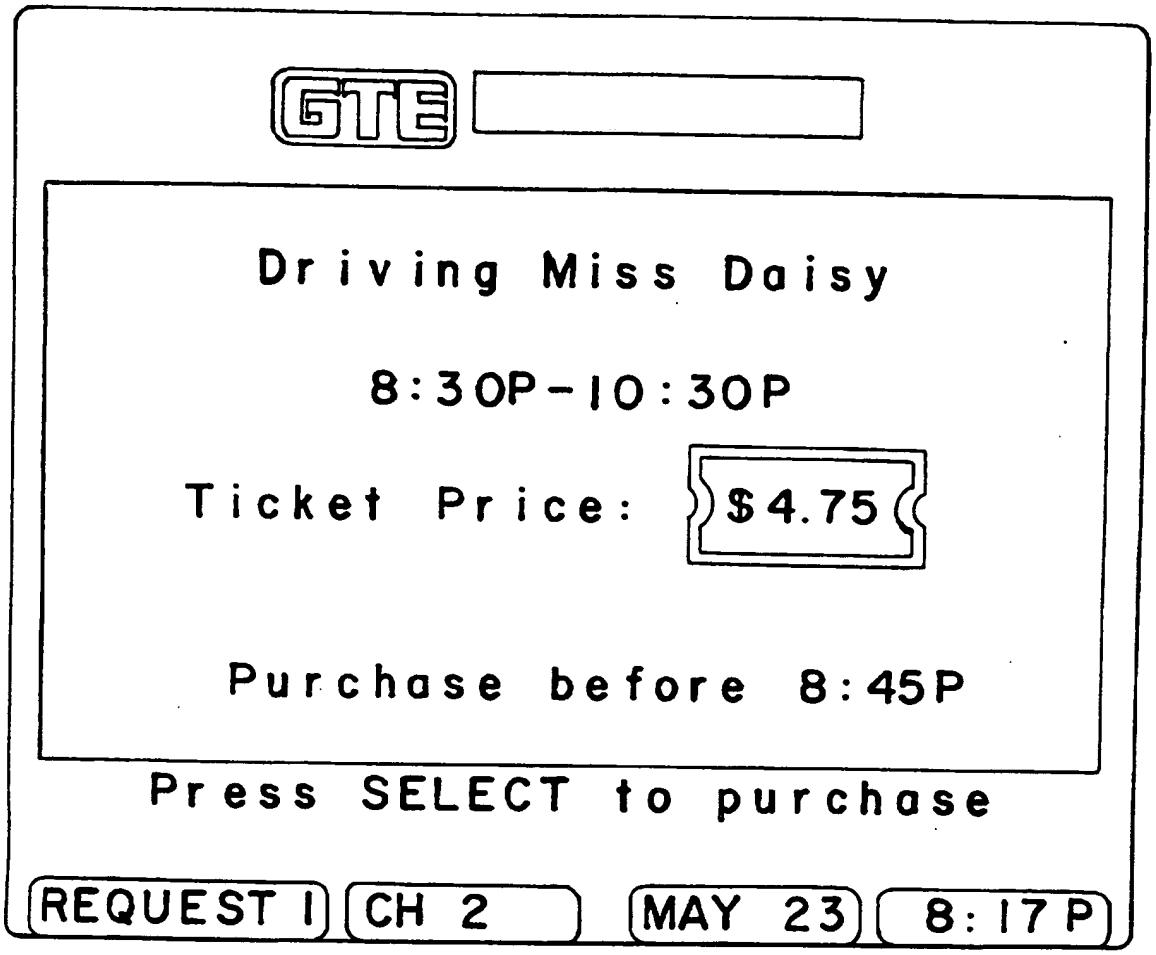

GTE
Driving Miss Daisy
8:30P-10:30P
Ticket Price:
$4.75
Purchase before 8:45P
Press SELECT to purchase
REQUEST 1
CH 2
MAY 23
8:17P

FIG. 5.

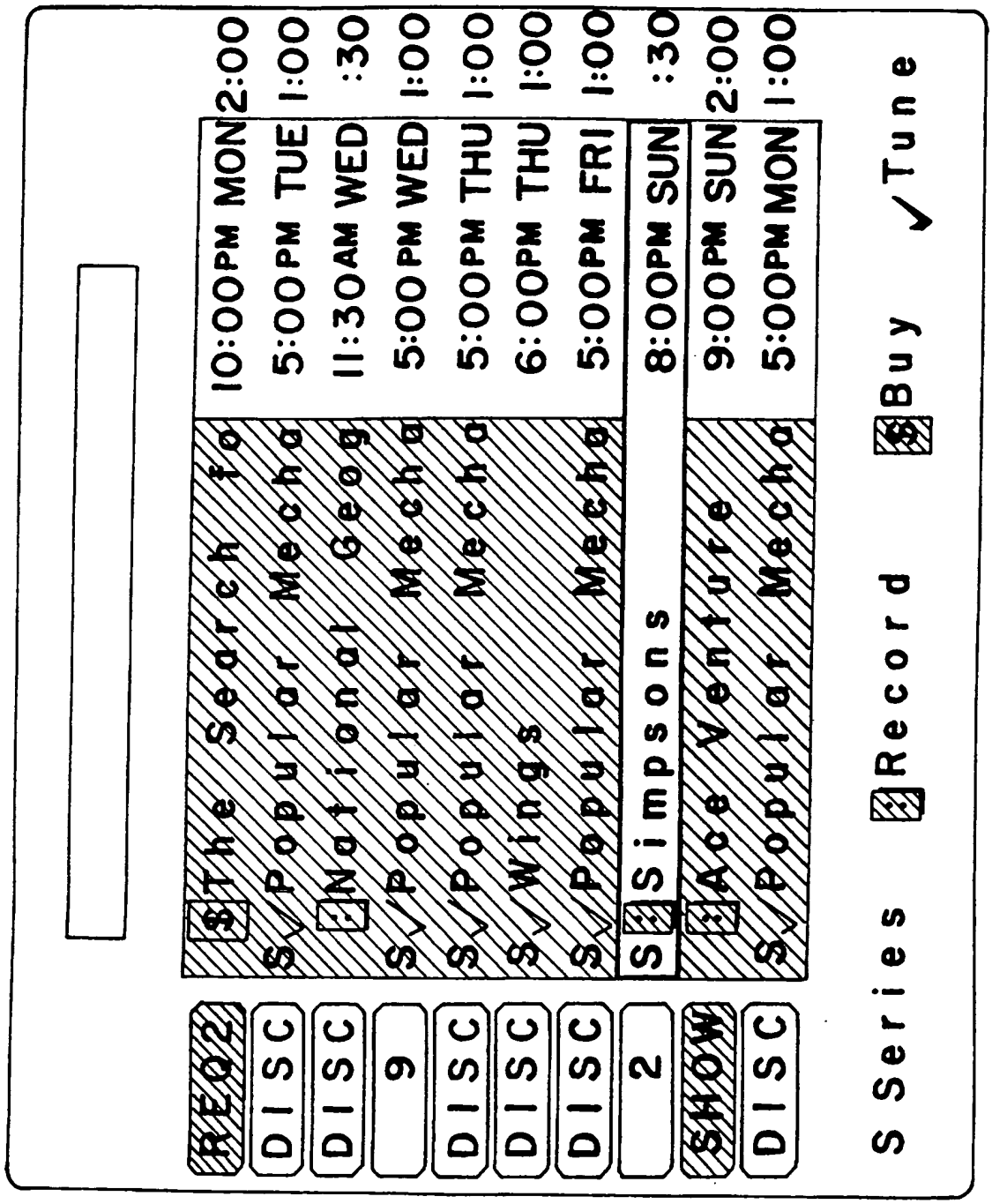

S Series
Record
Buy
Tune
REQ2
DISC
DISC
9
DISC
DISC
DISC
2
SHOW
DISC
$The Search fo 10:00PM MON 2:00
S/ Popular Mecha 5:00PM TUE 1:00
S/ National Geog 11:30AM WED :30
S/ Popular Mecha 5:00PM WED 1:00
S/ Popular Mecha 5:00PM THU 1:00
S/ Wings 6:00PM THU 1:00
S/ Popular Mecha 5:00PM FRI 1:00
S Simpsons 8:00PM SUN :30
Ace Venture 9:00PM SUN 2:00
S/ Popular Mecha 5:00PM MON 1:00

FIG. 6.

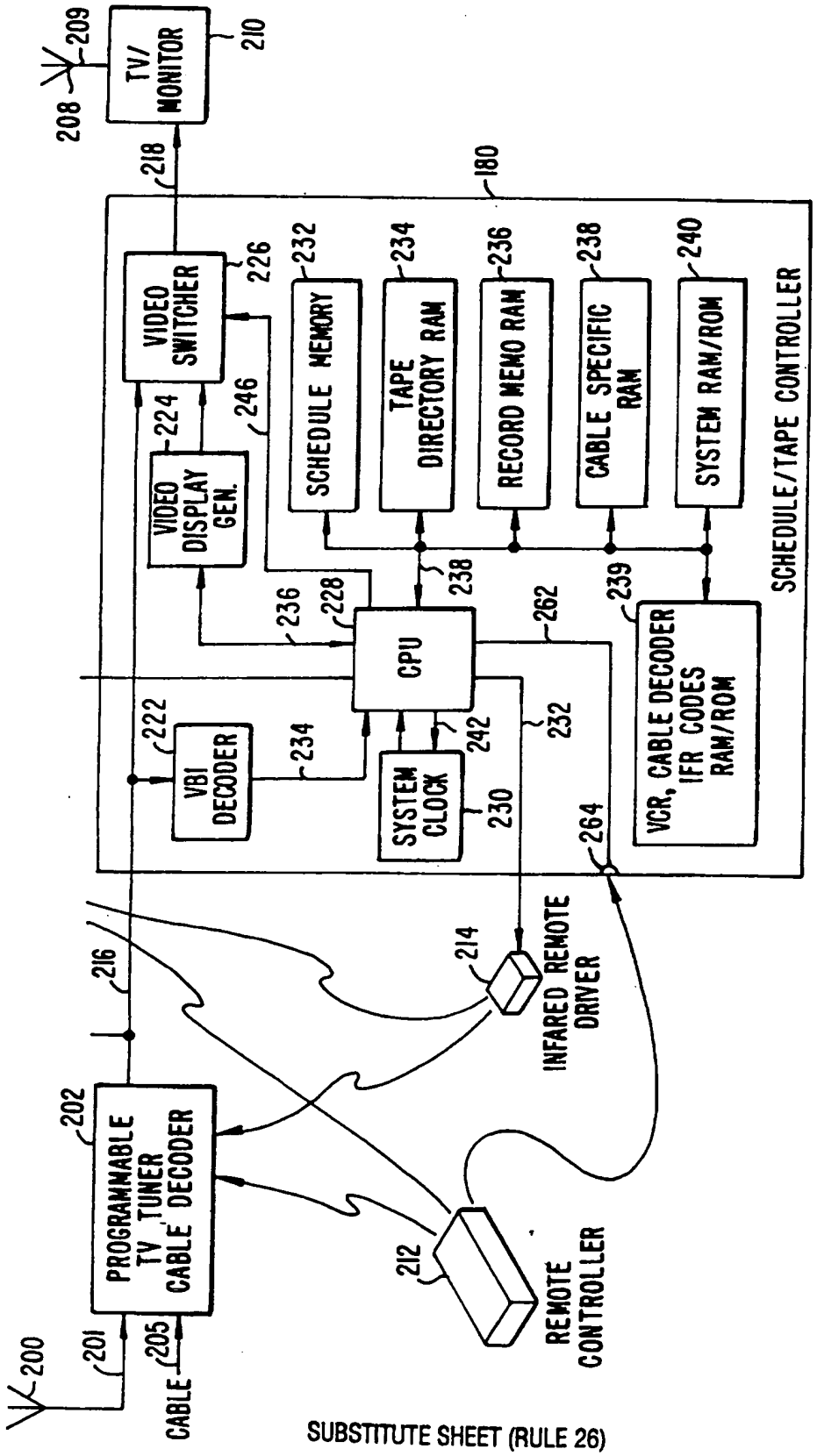

TV/ MONITOR
209
210
208
218
180
VIDEO SWITCHER
226
232
234
236
238
240
SCHEDULE MEMORY
TAPE DIRECTORY RAM
RECORD MEMO RAM
CABLE SPECIFIC RAM
SYSTEM RAM/ROM
224
246
VIDEO DISPLAY GEN.
SCHEDULE/TAPE CONTROLLER
236
228
238
239
CPU
262
VCR, CABLE DECODER IFR CODES RAM/ROM
222
VBI DECODER
234
242
232
SYSTEM CLOCK
230
264
216
214
INFARED REMOTE DRIVER
202
PROGRAMMABLE TV TUNER CABLE DECODER
212
REMOTE CONTROLLER
200
201
205
CABLE

FIG. 7.

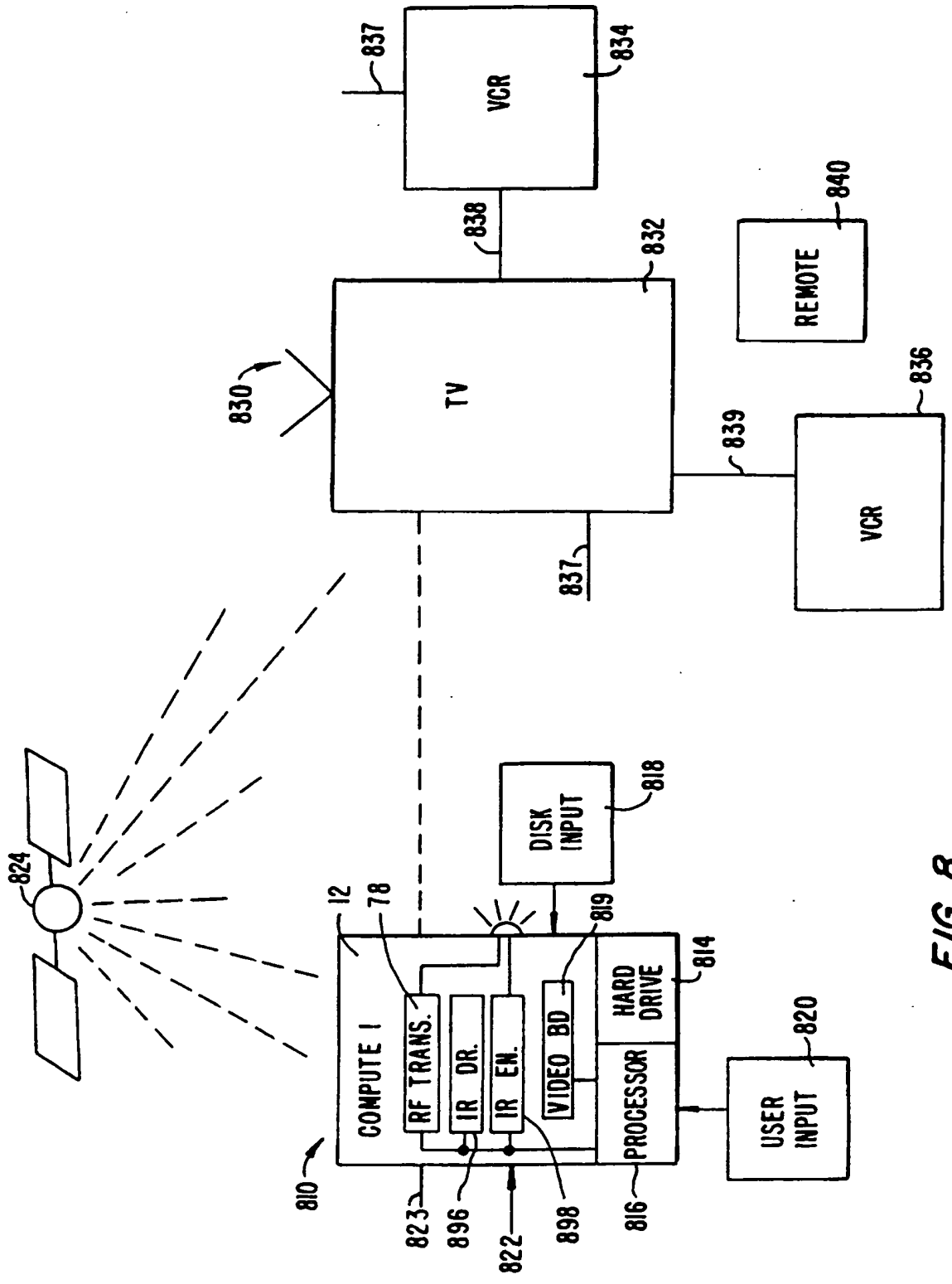

837
VCR
834
838
832
840
REMOTE
830
TV
836
839
VCR
837
824
12
78
DISK INPUT
818
819
814
HARD DRIVE
COMPUTE I
RF TRANS.
IR DR.
IR EN.
VIDEO BD
PROCESSOR
820
USER INPUT
810
823
896
822
898
816

FIG. 8.

BEST AVAILABLE COPY

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/16437

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04N 5/44, 5/50, 5/445
US CL :348/569, 570, 561, 562, 564, 906, 460, 13; 345/347

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 348/569, 570, 561, 562, 564, 906, 460, 13; 345/347

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,E	US 5,686,954 A (YOSHINOBU ET AL.) 11 November 1997, THE WHOLE DOCUMENT.	1-20
A	US 5,532,753 A (BUCHNER ET AL.) 02 JULY 1996, THE WHOLE DOCUMENT.	1-20
A	US 5,247,611 A (NORDEN-PAUL ET AL.) 21 September 1993, THE WHOLE DOCUMENT.	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 20 NOVEMBER 1997	Date of mailing of the international search report 26 JAN 1998
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer MICHAEL LEE Telephone No. (703) 305-4743

Form PCT/ISA/210 (second sheet)(July 1992)*